What is claimed is:

1. A method for transforming head surface coordinates to brain surface coordinates, comprising the steps of:

preparing image data obtained by taking simultaneously images of a plurality of markers set up at positions on a head surface and a brain surface image; and

projecting the positions at the markers on the head surface which are positioned on a three-dimensional head image in the data onto positions on the brain surface, which are positions underlying the positions on the head surface, for determining three-dimensional coordinate positions of the projected points.

2. The method according to claim 1, further comprising a step for normalizing the brain surface coordinates obtained from a plurality of subjects onto a standard brain.

3. The method according to claim 1 or 2, wherein the step for projecting the positions on the head surface onto the positions on the brain surface is carried out by a minimum distance search method for determining the positions on the brain surface underlying the positions of the respective markers on the head surface.

4. The method according to claim 1 or 2, wherein the step for projecting the positions on the head surface onto the positions on the brain surface is carried out by a perpendicular projection method for determining the positions on the brain surface underlying the positions of the respective markers on the head surface.

5. The method according to claim 1 or 2, wherein the step for projecting the positions on the head surface onto the positions on the brain surface is carried out by a head surface/brain interior reference dotted line segment connecting method for determining the positions on the brain surface

underlying the positions of the respective markers on the head surface.

6. The method according to any one of claims 1 to 5, wherein the respective markers are not actually set up at the head surface, but they are calculated from head figure information to be virtually set up.

7. A method comprising the steps of,

previously determining projected positions on the brain surface underlying positions to be standard points on the head surface by any method according to any one of claims 1 to 6; and

calculating coordinates of arbitrary points or a set of the points on the head surface from relative positions with respect to the standard points on the head surface for determining their projected points or a set of the points on the brain surface.

8. A method comprising the steps of,

previously determining projected positions on the brain surface underlying positions to be standard points on the head surface by any method according to any one of claims 1 to 6;

previously determining a probability distribution of the projected positions on the brain surface of the standard points from data of a plurality of subjects, and

determining brain surface coordinates obtained by projecting arbitrary points on the head surface onto the brain surface based on the standard points and their probability error information.

9. A distance distribution measuring method for determining a distance distribution between the head surface and the brain surface from head surface coordinates and the brain surface coordinates determined by any method according to any one of claims 1 to 7.

10. A software program for realizing the method according to any one

of claims 1 to 9.

11. A transcranial brain function measuring apparatus comprising:

a probe having an irradiation point for irradiating radial ray or electromagnetic wave from a head surface of a subject to a interior thereof and a detection point for detecting an interaction of the irradiated radial ray or electromagnetic wave and a brain on the head surface; and

a data processor for analyzing a condition of the brain based on a signal detected by the detection point of the probe;

the data processor being provided with a coordinate transformation section for transforming positions on the head surface to brain surface coordinates with data obtained by transforming the head surface coordinates to the brain surface coordinates in accordance with any method according to any one of claims 1 to 8, whereby a position on the head surface decided by the irradiation point and the detection point are transformed to the brain surface coordinates, and the analysis data based on the signal detected by the detection point is displayed on the transformed brain coordinates.

12. The transcranial brain function measuring apparatus according to claim 11, wherein the transcranial brain function measuring apparatus is a light measuring apparatus; and the probe is provided with light delivery point(s) as the irradiation points for emitting light and light reception point(s) as the detection points for receiving the light to be discharged to the outside after transmitting through and/or being reflected by the subject.

13. The transcranial brain function measuring apparatus according to claim 12, wherein the light measuring apparatus is a multi-channel light measuring apparatus in which a plurality of the light delivery points and a plurality of the light reception points are disposed on the head surface, respectively.

14. The transcranial brain function measuring apparatus according to claim 12 or 13, wherein the light emitted from the light delivery point(s) to the

subject is a light in a near-infrared region.

15. The transcranial brain function measuring apparatus according to any one of claims 11 to 14, wherein the position on the head surface determined by the irradiation point and the detection point corresponds to the central position along a straight line connecting these two points to each other.

16. A transcranial brain function measuring apparatus comprising:

a probe having an irradiation point for irradiating radial ray or electromagnetic wave from a head surface of a subject to a interior thereof and a detection point for detecting an interaction of the irradiated radial ray or electromagnetic wave and a brain on the head surface; and

a data processor for analyzing a condition of the brain based on a signal detected by the detection point of the probe;

wherein a distances between the irradiation point and the detection point is decided in such that a detection sensitivity at the detection point as a result of an interaction of the electromagnetic wave or the radial ray from the irradiation point and the brain on the surface thereof becomes the maximum on the basis of the distance distribution between the head surface and the brain surface determined in claim 9.